

California Education and the Environment Initiative

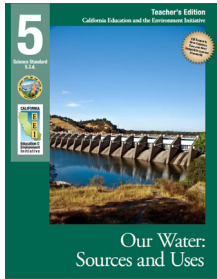
The EEI Curriculum cohesively integrates science and engineering practices (SEPs), content (disciplinary core ideas/DCIs), and crosscutting concepts (CCs) within its lesson procedures. This preliminary analysis intentionally teases apart the individual SEPs, DCIs, and CCs as a means of correlating the EEI unit with specific performance expectations; however, the EEI lessons weave these components back together.



Fifth Grade and Middle School (Grade 6 in the Integrated Course Model)

5.3.d. - Our Water: Sources and Uses

“Our Water: Sources and Uses” examines the movement, availability, and treatment of California’s water as the basis for students examining the distribution of fresh water in both natural and human-designed reservoirs. They learn about methods of water treatment and they consider the ways individual humans and communities use scientific information to protect Earth’s resources and environment. As students examine the water cycle, underground aquifers, lakes, streams, and rivers, they gather scientific data that gives them the opportunity to analyze the role of energy from the sun and the force of gravity in the movement of water throughout California. The lessons provide students the opportunity to discover the impacts that humans have on the quantity and quality of fresh water in the hydrosphere, an Earth system on which all life depends.



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Next Generation Science Standards\* Correlation with the California Education and the Environment Initiative (EEI) Curriculum

The EEI Curriculum is a great choice for transitioning to NGSS and contributes toward achievement of the performance expectations for the disciplinary core ideas reflected in the Summary Chart below: 5-ESS3 Earth and Human Activity and MS-ESS2 Earth’s Systems. Each EEI unit highlights a small number of performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts. Therefore, the EEI units contribute to students’ overall achievement of the performance expectations by the end of a school year, where they will have had multiple opportunities to engage in all appropriate science and engineering practices, disciplinary core ideas, and crosscutting concepts. While EEI was designed to teach the 1998 California science standards to mastery, it reflects the real world interconnections in science and already incorporates many of the paradigm shifts reflected in the NGSS. To learn more about how EEI supports NGSS, visit <http://californiaeei.org/NGSSGuides/>.



Correlation Chart Key

SEP (Science and Engineering Practices)
DCI (Disciplinary Core Ideas)
CC (Crosscutting Concepts)

	Next Generation Science Standards					
	5-ESS3			MS-ESS2		
California Connection		✓	✓	✓	✓	✓
Lesson 1 – Discuss natural and human-made reservoirs and water movement among reservoirs.		✓	✓		✓	
Lesson 2 – Brainstorm ways in which people use water, and then classify the uses into general categories.		✓				
Lesson 3 – Compare the natural water cycle to wastewater treatment by completing a Venn diagram.	✓	✓	✓	✓	✓	✓
Lesson 4 – Examine a series of California case studies to learn about water conservation methods.	✓	✓			✓	✓
Lesson 5 – Determine the consequences to ecosystems and human communities of changes in the quality or quantity of water in different watersheds.	✓	✓			✓	
Traditional Unit Assessment	✓	✓	✓	✓	✓	✓
Alternative Unit Assessment	✓	✓	✓		✓	
	SEP	DCI	CC	SEP	DCI	CC

Disciplinary Core Ideas Supported by this EEI Unit 5-ESS3 Earth and Human Activity MS-ESS2 Earth’s Systems					
Performance Expectations			Suggestions for Using the EEI Unit to Support NGSS		
<b>5-ESS3-1:</b> Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.			Use this unit to have students learn how treatment facilities can remove contaminants from water thereby allowing it to be redistributed through California’s water systems for use in a variety of ways. Have them examine different ways that water is stored and moved to meet human needs in different parts of the state. Provide an opportunity for students to analyze how communities across the state can conserve and monitor their water use.		
<b>MS-ESS2-4</b> ( <i>Grade 6 in the Integrated Course Model</i> ): Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.			Use the California data in this unit to have students develop a model that describes the cycling of water in Earth's systems and explains how water moves through the hydrosphere, geosphere, and atmosphere, including how water moves into underground aquifers as a result of the force of gravity, making it available for human use from wells or springs.		
Science and Engineering Practices (SEPs)	Suggestions for Using EEI to Support SEPs	Disciplinary Core Ideas (DCIs)	Suggestions for Using EEI to Support DCIs	Crosscutting Concepts (CCs)	Suggestions for Using EEI to Support CCs
<b>Obtaining, Evaluating, and Communicating Information (5-ESS3-1)</b>	Use the unit to have students explain the process of wastewater treatment (Lesson 3). Have students evaluate different types of water conservation activities (Lesson4). Have students interpret different watershed scenarios and make claims as to how certain events will affect people and ecosystems (Lesson 5). Have them discuss and communicate with each other about the possible consequences of changes to water quality and quantity that may result from changes to an ecosystem (Lesson 5).	<b>ESS2.C: The Roles of Water in Earth’s Surface Processes:</b> <ul style="list-style-type: none"><li>• Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. (MS-ESS2-4)</li><li>• Global movements of water and its changes in form are propelled by sunlight and gravity. (MS-ESS2-4)</li></ul>	Use the unit to have students determine that only a small fraction of water on Earth is readily available for human use (Lesson 1). Have them examine how the global movement of water throughout the water cycle is driven by gravity and energy from the sun (Lesson 3). Have students examine the data and conclude that water conservation is critical to meet the needs all living things have for fresh, clean water (Lessons 3, 4, and 5).	<b>Systems and System Models (5-ESS3-1)</b>	Use the unit to have students study system models and learn about the sources of fresh water on Earth (Lesson 1). Examine systems models as a means of helping students understand the water cycle and how California’s wastewater treatment facilities are part of the overall water management system across the state (Lesson 3).

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<b>Developing and Using Models (MS-ESS2-4)</b>	Use the unit to have students consider a model of the water cycle that describes how the sun’s energy and the pull of gravity affect the processes of the water cycle above, upon, and under the ground (Lesson 3). Have them use a Venn diagram to compare the process of cleaning water through the water cycle and through wastewater treatment (Lesson 3).	<b>ESS3.C: Human Impacts on Earth Systems:</b> Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1)	Use the unit to have students learn how humans influence the natural water system in California as it is used to meet human needs (Lessons 1 and 2). Have them explore different solutions that humans have developed to help minimize these effects on Earth through engineered solutions, education, and understanding scientific phenomenon (Lessons 3, 4, and 5).	<b>Energy and Matter (MS-ESS2-4)</b>	Use the unit to have students learn that the transfer of the sun’s energy during the natural process of evaporation moves matter throughout the process (Lesson 3). Have them examine and analyze evidence from the water management system in California that leads them to the conclusion that gravity plays an important role during natural processes of the water cycle and during the designed process of water management and wastewater treatment (Lessons 3 and 4).